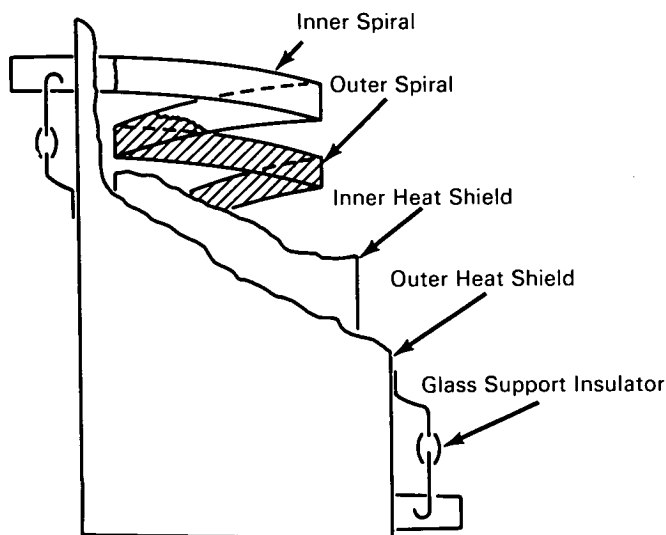


AEC-NASA TECH BRIEF



AEC-NASA Tech Briefs describe innovations resulting from the research and development program of the U.S. AEC or from AEC-NASA interagency efforts. They are issued to encourage commercial application. Tech Briefs are published by NASA and may be purchased, at 15 cents each, from the Clearinghouse for Federal Scientific and Technical Information, Springfield, Virginia 22151.

Lightweight Heater Generates High Temperatures from Low Current



The problem:

To design a small heater with a high temperature capability to operate on low current, and be of simple, compact configuration and light in weight.

The solution:

A double spiral molybdenum heater element that uses low current, needs no insulation, and requires support only at the ends, which are also the power input points.

How it's done:

Two molybdenum spirals are wound with the same pitch, but in opposite directions. The spirals are assembled one inside the other and are spot-welded for support where they intersect. This eliminates sag in the heater. The double spiral heater is the electrical equivalent of a single spiral element with strips of the same length but twice the width.

Notes:

1. Because there is no insulation or internal support necessary, the heater is lightweight. It is essentially rigid so that it could be used in portable equipment and appliances or in a confined space. Since it is easily sterilized, it can be used in clean rooms and sterile environments. Its temperature potential will vary with its size and environment.
2. In development tests, a four- to five-inch long double heater in a vacuum generated a temperature of 1000°C and required a current of only 75 amps. It has proven extremely durable.
3. Inquiries concerning this innovation may be directed to:

Sandia Office of Industrial
Cooperation Org. 3413
Sandia Corporation
Post Office Box 5800
Albuquerque, New Mexico 87115
Reference: B68-10223

(continued overleaf)

Patent status:

No patent action is contemplated by AEC or NASA.

Source: E. L. Hansen
(SAN-10004)